

# **METHODS AND ARRAY FOR CREATING A MATHEMATICAL MODEL OF A PLASMA PROCESSING SYSTEM**

## **ABSTRACT**

A method of creating a simplified equivalent circuit model of a plasma processing system, including an electrical measuring device, a lower electrode, an upper electrode, and a signal generator device is described. The method includes creating a simplified equivalent circuit equation, including a set of variables, of the plasma processing system, wherein the electrical measuring device comprises a first subset of variables, the lower electrode comprises a second subset of variables, the upper electrode comprises a third subset of variables, and the signal generator device comprises a forth subset of variables. The method also includes generating a set of signals, each of the set of signals being generated at a different frequency, wherein the signal generator device is coupled to the electrical measuring device, the lower electrode, and the upper electrode. The method further includes measuring the set of signals with the electrical measuring device, wherein at least one measured signal is generated for each of the set of variables; and, creating a simplified equivalent circuit model from the set of signals.